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Mosquito Surveillance

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Abstract
During 2006, mosquitoes were collected at the Western Research Farm, Castana, and McNay Research Farm, Chariton, IA in gravid traps that were baited to attract female mosquitoes that were ready to lay eggs(oviposit). The gravid trap in particular is in widespread use in mosquito control programs throughout the U.S., because the trap preferentially attracts mosquitoes that 1) are known vectors(in the genus Culex) of West Nile virus(WNV) and St. Louis Encephalitis virus (SLEV) and 2) have taken a potentially infectious blood meal (prerequisite to oviposition), thereby increasing the chance of detecting virus. Specimens were collected daily and kept cold to maintain integrity, then were mailed to campus. Once in the lab,specimens were identified to species and vector species were pooled into groups of up to 50—a standard operating procedure for surveillance labs across the U.S.—which then were subjected to virus detection assays. The results of trapping at these sites are shown according to the species of mosquitoes collected. Mosquitoes in the genus Culex (Cx. in table 1) were subjected to virus detection assays, and none of those collected at either farm tested positive for infection with WNV or SLEV.

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Materials and Methods

During 2006, mosquitoes were collected at the Western Research Farm, Castana, and McNay Research Farm, Chariton, IA in gravid traps that were baited to attract female mosquitoes that were ready to lay eggs (oviposit). The gravid trap in particular is in widespread use in mosquito control programs throughout the U.S., because the trap preferentially attracts mosquitoes that 1) are known vectors (in the genus *Culex*) of West Nile virus (WNV) and St. Louis Encephalitis virus (SLEV) and 2) have taken a potentially infectious blood meal (prerequisite to oviposition), thereby increasing the chance of detecting virus. Specimens were collected daily and kept cold to maintain integrity, then were mailed to campus. Once in the lab, specimens were identified to species and vector species were pooled into groups of up to 50—a standard operating procedure for surveillance labs across the U.S.—which then were subjected to virus detection assays. The results of trapping at these sites are shown according to the species of mosquitoes collected. Mosquitoes in the genus *Culex* (*Cx*. in table 1) were subjected to virus detection assays, and none of those collected at either farm tested positive for infection with WNV or SLEV.

Results and Discussion

Interestingly, these traps attracted a number of *Aedes triseriatus*, the Eastern tree hole mosquito, so called because they oviposit in tree holes. This mosquito is extremely significant in terms of public health, because they transmit La Crosse encephalitis virus (LACV), which causes very serious infections in young children in the Midwest and Mid-Atlantic states. These mosquitoes too were pooled and tested for LACV and none were positive. As a result of the data obtained for *Ae. triseristus*, a grant to the Pest Management Foundation has been submitted with hopes of securing funding to optimize methods for trapping this particular species, because current methods for *Ae. triseriatus* trapping are insufficient for surveillance for LACV.

In addition to the mosquito trapping, Nick Howell, superintendent at the Horticulture Station, Ames, IA, maintained a flock of sentinel chickens at the Horticulture Station in Story County for the Medical Entomology Lab. Nick and his personnel graciously accommodated our coop and flock and fed and watered the chickens daily. Chickens provide a means to measure WNV and SLEV activity in the environment. As a sentinel animal, the birds do not sicken from infection with either virus, quickly develop antibodies, and do not serve as reservoirs for infection. Therefore, we can take frequent blood samples and determine whether a virus is actively being transmitted. Blood samples from chickens were taken weekly.

Our standard procedures state that should a mosquito pool test positive during the summer season, the county public health agency and/or personnel operating the surveillance effort are immediately contacted. This allows the appropriate officials to consult with us on appropriate measures for disease control, including posting alerts, using personnel protective gear/repellents, and limiting activity during times when mosquitoes would be active.

Table 1. Mosquitoes trapped at ISU Research and Demonstration Farms, 2006.

Location	Species	Total trapped
McNay, Lucas Co.		
	Ae. canadensis	1
	Ae. triseriatus	38
	Ae. vexans	1
	Cx. erraticus	2
	Cx. pipiens	98
Western, Monona Co.		
	Ae. canadensis	13
	Ae. triseriatus	62
	Ae. trivittatus	1
	Ae. vexans	3
	Cx. erraticus	1
	Cx. pipiens	35